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The Constitutional Psychopathic Inferior

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THE term "constitutional psychopathic inferior" includes a heterogeneous group of individuals who are unable to adapt themselves to their social environment. These three words well describe the condition. Constitutional indicates the absence of disease or of organic factors; psychopathic denotes the marked instability and lack of social responsiveness; inferiority is self-explanatory. Common synonyms are moral imbecility, constitutional ethical aberrations and psychopathic personalities. Strecker and Ebaugh[7] consider it an unsatisfactory diagnosis which should never be made until all other possibilities have been ruled out.

The same authors sum up the situation by calling it feebleminded-ness involving all spheres save the intellectual. Most writers state that the intelligence is about that of the average individual, in fact Craig and Beaton[3] point out that persons in this category often possess great intellectual powers and that men of genius not uncommonly belong to this class. However, the opposite may also be true and the condition may be associated with a mental defect. Emotionally, the subjects are unstable and show rapid transitions from joy to sorrow, from affection to hatred, and from egoism to exaggerated generosity. Their judgment is poor and they are influenced readily by passing moods and people. The most common defect is their inability to see the need for punishment. No amount of severity or kindness will teach them the moral code, or as Bleuler[1] aptly states: "Neither cake nor the whip has any visible effect." They lack courage and are bullied into unwise activities, the results of which they can intellectually appreciate but not evaluate. Their memory is good, they are correctly oriented in all three spheres, and they do not have delusions or hallucinations.

The history in these cases shows an abnormality which is likely to become manifest in childhood or early youth, but is greatly accentuated with emancipation from parental control and by the wider social contacts of adult life. The varied manifestations have been subdivided into groups such as pathological lying, nomadism and sexual psycho-

pathies, but the tendency at the present time is to include them all under the one heading. While individuals in this class change frequently from job to job, and seem unable to sustain their efforts or retain an ambition for any prolonged period, they may be clever with their hands, good at games and often artistic and musical. They never save money, probably because they lack a fixed ambition and a goal in life. Pathological liars and swindlers belong to this class, the pathological type differing from the non-pathological in that the misconduct is not proportional to any discernible end in view and occurs over a period of years or a lifetime. The lies may be entirely new creations of phantasy (usually wishfulfillment) or they may be the result of a process of falsification of memory; in either case, one lie leads to another and the final result may be extensive and complicated fabrications. When challenged regarding the truth of their statements the response varies; some assume attitudes of repentance, while others deny making the statements. These people make a good impression socially as they are gay, talkative, and full of interesting but superficial and unreliable information. Pathological swindlers readily develop from liars of this type if strong moral feelings are absent, as is usually the case; then they often assume some title, or important position and use it to enrich themselves, their methods being extremely cunning and plausible. Rarely an individual, who combines moral indifference with sane judgment and a strong will, has a brilliant career. Kleptomania is a slightly different condition, which is also included in the subject under discussion. The persons, usually children, steal some article of insignificant value to themselves and take little or no precaution to hide their booty or conceal the theft. Nomadism, which may be defined as a wandering impulse strong enough to make social adjustment impossible, is another manifestation of the disorder. Persons with this failing seldom have a rational reason for their wanderings and do not visit the points of interest in the places they pass through, yet they may acquire much information regarding climates, distances, roads, local customs, etc., which they may use to present a favourable impression. Certain paranoid characteristics are common. The individuals concerned are arrogant and may regard trifling incidents as grave injustices which lead to quarrels and even lawsuits. Sexual abnormalities are almost universal in these cases due to a defective control of the instincts.

The relationship of this group to crime should supply food for thought to those engaged in dealing with the criminal population. Criminals may be divided into two main categories, viz., (a) the professional (with a positive motive), and (b) the habituate (with a negative motive). It is the latter group with which we are concerned. There are two main divisions of habituate criminals: (1) Those who commit crimes as the result of an uncontrollable emotional outburst, and (2) those who succumb to temptation and take an opportunity which they encounter accidentally or which is proffered them by professional criminals. The constitutional psychopathic inferiors appear

to fall naturally into bad company and to learn evil things rapidly while they learn good things with difficulty, if at all. They only respect authority as they see it. From the authors consulted, the following list of crimes and sins against society to which this mental type seems particularly prone has been compiled: theft, delinquency, alcoholism, drug addiction, prostitution, vagrancy, pyromania, slander and sanitary menace.

The differential diagnosis is chiefly between this condition and the other causes of moral defects. The following abnormalities should be excluded before a diagnosis of constitutional psychopathic inferior is made: (1) Intoxication, (2) Imbecility and idiocy, (3) Epilepsy, (4) First symptoms of mental breakdown, (5) Result of a former attack of insanity, (6) Sequela of encephalitis lethargica.

Even then mistakes will be made unless it is remembered that there are cases where an otherwise normal person finds himself, due to some unconscious motive, compelled to commit some petty theft or delinquency to his own horror and amazement. Also, during childhood the environment may have been such that he was not taught to distinguish right from wrong.

The prognosis varies all the way from Clare's[2] opinion that they all readjust themselves in time (based upon the fact that, in his experience, he has never seen a patient of this class over 30 years of age), to Craig and Beaton's[3] blunt statement that none recover. Probably the truth lies between these two opinions.

The treatment is unsatisfactory since the cause is unknown and cannot be combatted directly. Prophylaxis, by preventing the marriage of degenerates, is suggested. Early and wise education helps in a few cases. Special schools must be attended since disgrace would be inevitable at ordinary institutions. Possibly the best treatment is a standardized rigid disciplinary regime such as that offered in the army.

CASE REPORTS

The case histories of two patients are given below.

Case 1: A female, aged 20, the youngest member of her family, has one sister and one brother who are apparently normal. Her mother and her father died about five years ago; neither parent had any known abnormality. Her paternal grandmother was in a mental hospital for some months following the birth of every child, while her maternal grandmother was "high strung" but was never in an institution. The patient herself is an attractive young lady, tall and well developed, her only physical defect being a slight external strabismus and almost complete loss of vision in the left eye. She belongs to a prominent family and has many social accomplishments. Her conversation is very interesting with an endless supply of amusing and unusual personal anecdotes which, although of doubtful veracity, are always well told. She has always been a keen athlete, having won the high school junior athletic championship. She plays most games well, including tennis,

golf, hockey, swimming, and diving. She also plays the piano and is quite clever at needlework, particularly knitting. At social events, such as dances and bridge parties, she is quite at home; in fact, if one met her socially without a knowledge of her history, one would conclude that she was quite an attractive and clever person.

Her history dates back to early childhood when she tended to make false statements and to steal. She did not get into any serious trouble until she was 16 years of age. The first important incident was the refusal to re-admit her to a private school because of stealing. On the advice of a psychiatrist she was sent to another school where she spent two years without being accused of any gross misconduct and got her senior matriculation at the age of 18. The next year she spent in France where, also, she appears to have conducted herself satisfactorily. Two years ago, she registered at a University in pursuit of her only apparent ambition (Medicine) but she was not permitted to finish her first year because of stealing money and clothing from her fellow students. After two weeks in a psychiatric hospital, she was permitted to start training as a nurse. Her work was quite satisfactory but, in other matters, she broke most of the rules of the institution, including one or two occasions when she stayed out under doubtful propriety. Some of her classmates missed money, and although it was not proven that she took it, her known offences were such that the other nurses petitioned the superintendent to have her dismissed "as her presence was not advisable in the interests of the hospital." About this time she had a fur coat made to order, without paying for it, and pawned it for $25. After about nine months of training she disappeared from the hospital for a few days. She informed her mother that she was married but later admitted that she was not, although she had gone on a trip with a man and had lived with him during the week of her absence. After a few days in a nursing home, she was admitted to a hospital for nervous diseases, where she was at first quite troublesome. She delighted in tantalizing the nurses and making remarks to irritate the other patients, but after several months she became quite agreeable and co-operative, and even helped the nurses in some of their duties. During her residence there, articles were missed by some of the patients, but only once, with regard to a package of cigarettes, which she did not trouble to conceal, was she proven guilty.

One psychiatrist, who saw her frequently, noted "she makes statements about herself that have not the remotest semblance to the truth, and are distinctly pathological." Our experience confirms this, since samples from her store of personal anecdotes were often found to be false regarding those circumstances which we were able to check; for example, she spoke of having two brothers and two sisters who participated in a number of her stories (actually she has one of each); of getting her senior matriculation at 15 (really 18); of her mother living in Toronto when she herself was writing to her at another address; of having trained as a nurse for 2¾ years (really nine months). All

the above falsifications are distinctly pathological since in no instance would the truth have been detrimental to herself, nor did the falsehoods bring her any direct benefit. When challenged regarding her imaginary brothers and sisters, she insisted that the case history was wrong and to prove it said she would write to her sister and ask her to state the number in her reply. After writing to her sister, five weeks intervened, and although she is known to have received a reply during that time, she produced no proof of the statement. She apparently finds it hard to say "no," as illustrated by one incident when, after voluntarily announcing that she would never touch liquor again, she took some when it was offered to her later the same day. As signs of a nervous temperament, it was noted that her nails were bitten down to the quick, and that she smoked an almost endless succession of cigarettes (during one month she averaged over 50 a day). Emotionally, she is quite unstable. She weeps with little provocation and makes rapid transitions from tears to laughter and from morose silence to gay loquacity.

Her mental status, according to an attending physician, is normal except that one feels that she is holding something back. Although her expression is usually pleasant and she answers readily, her judgment is poor. She realizes her failings, yet she cannot decide what course to take. Her trend of thought is either variable or she deliberately intends to deceive. Her plans for the future are vague and one feels that she would act without considering the consequences.

This is quite a typical history showing abnormalities starting in early childhood and becoming greatly increased at adolescence and it is a good example of pathological lying. An unusual feature is the interval of three years, between the ages of 16 and 19, during which she committed no serious misdemeanour so far as is known.

Case 2: A young man, aged 23, has an interesting family history. His father is a successful business man of mild temperament, painstaking and persistent. His mother is of the extrovert type and devoted much attention to such fads as diet and exercise. His only brother is a barrister who is fairly stable mentally. One sister died following an unhappy marriage and is suspected of having committed suicide, while the other is rather nervous, impetuous and excitable.

The patient is quite adipose, height 5 feet 9 inches, about 180 pounds, with a rather feminine type of figure and sparse facial hair, all of which is rather suggestive of pituitary dysfunction. His skin is dry and irritable with some subcutaneous thickening and his nails are brittle but his basal metabolic rate is consistently normal. He is rather indolent, being content to lie around all day and do nothing more than to read or listen to the radio. His exercise is quite insufficient, as he has no athletic inclinations, even to the extent of doing very little walking. He is egotistical and supercilious and delights in recounting the importance of his relatives and the great wealth and power of his father. Instead of being ashamed of his history he is rather proud of it

and enjoys talking of some of the incidents in a careless, flippant manner.

He began to show abnormalities when about five years of age, the earliest sign being increasing adiposity, an enormous appetite, and drowsiness, until at 10 years of age he weighed 110 pounds. At the same time, he did some petty stealing and lying which, although many means of correction were tried, became steadily worse. At 14, treatment was commenced with pituitary and thyroid extracts, which have been continued up to the present time. His education has been obtained almost entirely at private schools and it included considerable high school work.

His history from this point strongly emphasises one characteristic, namely, a marked lack of perseverance with early enthusiasm, but no continuity of effort. He spent two years at a military school but did not make good progress. Afterwards, he attended a commercial institution for a few months but soon tired of it and gave it up. About two years ago, he began to work in the office of a trust company and was given an excellent report at the end of the first six months; however, the standard of his work gradually declined and he gave it up after another six months. When old enough to drive a car, he got a craving for speed which resulted in considerable trouble. On one occasion, after a party with probably too much liquor, he ran his car into a ditch on the way home and he entered a farmer's house in the neighborhood and went to bed. The farmer was amazed to find him there in the morning, but knowing who he was, treated him kindly and sent him on his way home, but before he got there, he wrecked the car by running into a ditch again. About one year ago, he eloped with a 16-year-old girl but he soon tired of her and they separated in less than six months. After this, he took a trip to Europe where he was involved in an incident which resulted in an injury to another person. The details are uncertain but he had been drinking and the police arrested him for assault. He says that he remembers nothing either of this or of the incident at the farm house. On his return to Canada, he was admitted as a patient to a hospital for mental disorders. One of his chief delights was to bang doors and to talk in a loud voice when he knew some of the other patients were trying to rest; another was to lay complaints against members of the staff, although these usually had little foundation. Recently, he has taken up the study of radio with his customary early enthusiasm and has built several shortwave sets as well as obtaining diplomas from several correspondence schools. Since the development of this new interest he has been more agreeable and has displayed considerable more activity than previously. His latest wish is to own and operate a commercial radio station.

The attending physician considers his mental status to be normal except that his memory is only fair, with a defect probably due to inattention. His behaviour shows him to be very critical although he seldom has a good reason to support his views. His judgment is

defective as he has little insight into his condition and is proud of his behaviour instead of being ashamed of it. His emotions are flattened and he is indifferent about most things.

In evaluating this case it is necessary to consider endocrine disturbances, alcoholism and epilepsy as possible factors influencing the clinical picture.

SUMMARY

1. The definition and alternative names for constitutional psychopathic inferiority are given.

2. From a psychological standpoint, patients with this condition have usually normal intelligence and memory but their emotions are unstable, their judgment is poor and their courage lacking.

3. The history usually dates from childhood and contains some of the following: inability to hold a job, pathological lying or swindling, kleptomania, nomadism, mild paranoid characteristics and sexual abnormalities.

4. Its relation to crime is discussed and it is pointed out that the offences are due either to uncontrollable emotions or inability to resist temptation.

5. The differential diagnosis is chiefly from the causes of moral defects which are enumerated.

6. The prognosis is such that improvement may be expected.

7. The treatment as a rule consists of early education and discipline.

8. Two illustrative cases are described.

The author wishes to thank Dr. Harvey Clare, of the Homewood Sanitarium, Guelph, for permission to report these two cases; also Dr. G. K. Wharton and Dr. J. W. Crane for advice in the preparation of this paper.

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Drugs Past and Present

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FROM the beginning, all races of mankind have attempted to heal their sick and in their attempts to refit men for normal lives, many curative methods have been employed. One of the most ancient and successful of these was treatment by drugs. Man's early knowledge of drugs was a direct outcome of his search throughout the vegetable kingdom for plants which could be used as food. It was noted that some of these modified the physiological processes in such a way as to produce peculiar effects. This fact is not surprising since man is either directly or indirectly a product of the vegetable kingdom. With the present revival of interest in the treatment of disease, the day may not be far distant when a physician will be valued as much for his therapeutic as for his diagnostic skill.

The first record of the treatment of disease by drugs is an Egyptian manuscript which dates from the 16th century before Christ. This scroll is 12 inches wide and 250 feet long. It contains many chapters on remedial agents and methods of compounding drugs, some of which are in common use today. At that time "gun-shot" prescriptions were very popular; some of the formulae contained as many as 35 ingredients. Comments on the prescriptions are in evidence as, for example, where an ancient apothecary had written "good" in the margin opposite many of the prescriptions.

Until the time of Hippocrates, who was born in 460 B.C., the knowledge of drugs was badly contaminated by mythology but he did much to separate the one from the other. In his writings, he named nearly 400 drugs, a large number of which are still in use, and he prescribed pills, ointments, poultices, gargles, inhalations, etc.

During the beginning of the Christian era, a Roman named Celus compiled considerable information pertaining to drugs. He was, however, a collector of knowledge rather than a practitioner. At about that time there appeared Dioscorides, a physician who became an authority on Materia Medica.

Another outstanding pharmacist and physician who lived in that era was Galen, a Greek, who became a Roman citizen. He devised so many preparations of vegetable drugs that such are still called "Galenicals." Also, he was the originator of "cold cream."

From the time of Galen until the 12th and 13th centuries, the Arabs were almost solely responsible for the development of medicine and pharmacy. The most famous of them was Maimonides, whose oath and prayer signifies to the pharmacist what the oath of Hippocrates does to

the physician. The gist of it may be understood from the following selected lines:

"O, grant—
That neither greed for gain, nor thirst for fame, nor
vain ambition,
May interfere with my activity,
For these I know are enemies of truth and love of men."

By the 11th century the Arabs had founded great medical schools in which a study of drugs was one of the principal subjects. Similar schools were later opened at Padua and Leyden.

By the 17th century, pharmacy had developed into a complicated art, and many difficult and tedious operations were thought to be necessary for the preparation of even the simplest medicines. The physician thus came to look upon the pharmacist not only as one possessing great technical skill but as an indispensable aid to him.

Until the first half of the 16th century much time was spent in the search for two mythical substances; one, the Philosopher's Stone, reputed to possess the power of changing the baser metals into gold, and the other, the Elixir of Life, which was supposed to confer upon its possessor perpetual youth. Paracelsus, the father of pharmacy, condemned the search for these non-existent substances and maintained that the true purpose of chemistry was not to make gold but to prepare medicines. He first introduced the use of chemical salts internally in the treatment of disease. Also, Paracelsus exerted considerable influence on the standards of the pharmacists, who before his time were mere mixers of drugs. Thereafter, they had to study chemistry and botany in order that they might be better qualified to compound the preparations which the physician prescribed.

With the beginning of modern experimental pharmacology, the task of removing inactive drugs from the Materia Medica was begun. In a number of instances it was found that, when a reputed remedy was tested, it failed to show any action that would justify its therapeutic claims, which were usually ill-founded.

In order to demonstrate how our present knowledge of drugs is built up step by step, let us consider digitalis. Withering discovered its action in the removal of certain types of oedema. Sir Lauder Brunton pointed out that instead of stimulating the kidneys, as Withering had thought, the drug caused the hearts of frogs and dogs to beat slower and stronger. In 1916, Eggleston and Hatcher showed that doses of digitalis much larger than had ever been given before were safe for animals and man.

Besides the botanical drugs, artificial preparations are being added constantly to our list. Emil Fischer, while searching for an artificial caffeine in the laboratory, gave one of his new substances to Von Mering who tried it out on dogs and rabbits and found that when administered in very small doses it produced sleep and was safer than any of the

drugs previously used for the purpose. Thus barbital, pheno-barbital and a number of other similar drugs were discovered.

It is important from now on that no drugs be added to our list until we are firmly convinced that they are worthy of recognition. The introduction of new remedies into the practice of medicine should take place only after they have been carefully tested, chemically, pharmacologically and clinically. The promptness with which a new drug can be evaluated will depend upon how thoroughly its pharmacology has been studied before it is offered for clinical trial. If the clinical results are in agreement with the unbiased observations recorded in the research laboratories, then the initial results can be better evaluated. Leake maintains that the clinical trial of new preparations should be made only after a critical disinterested pharmacological study has estimated (a) the toxicity, (b) the type and mode of action, (c) the worthiness of application to human beings, and (d) the reasonableness of replacing existing drugs.

The pharmacologist is not a clinician and, while his evaluation of the drug is very important, the final check-up remains a clinical problem. The pathological factor in the sick may alter considerably the character of a drug's action. The clinician is not justified in using a new medicament without first making a study of its pharmacological effects. It is impracticable, however, for him to follow detailed reports of pharmacological and clinical experiments. In order to obviate this difficulty, the American Medical Association has established a council on Pharmacy and Chemistry which prepares a report each year on medicinal substances regarding which the results of chemical, pharmacological and clinical investigations have justified their use. Those substances on which the Council reports favourably and which stand the test of time are admitted eventually to the Pharmacopoeia. These reports are available to the profession in book form at a low cost. This publication, called New and Non-Official Remedies, should be in the hands of every practitioner and it should be his guide in the prescribing of new drugs. Lack of intimate knowledge of the drugs prescribed has often been responsible for a physician developing into a therapeutic nilist.

The immense amount of work involved in the study of pharmacy is evident when one considers the following facts: There are about 700 preparations in the British Pharmacopoeia, nearly all of which are used by successful therapeutists. The United States Pharmacopoeia contains about the same number, and many of these find their way into Canada. In addition, there are numerous new and non-official remedies. Besides studying the pharmacology of all the drugs, the student should learn the constituents, properties and doses of each. As to their pharmacological action, it is true that there is an overlapping but, in the case of each active principle, practically the whole field of physiology must be covered.

Much of our present knowledge of physiology was gained by the

use of drugs. By their specific action on certain anatomical or hypothetical areas, the minute details of the physiological processes of various parts have been worked out. It is evident, therefore, that in order to understand thoroughly the action of a drug it is necessary to understand the physiology of the structures involved. This adds to the difficulties of the student of pharmacology. As to overlapping, if a drug is known to stimulate smooth muscle directly, one would expect to find certain actions in certain organs. This is not always true, however, and, as our knowledge increases, we find more and more that generalizations in pharmacology as well as in the other sciences are usually wrong.

With a mass of detail to be learned in a short time, it is no wonder that some students go out to practise medicine without sufficient grounding in a subject which is the basis of the treatment of disease. It is certainly as illogical to prescribe drugs without a knowledge of pharmacology as it is to practise surgery without a thorough grounding in anatomy. It is true that after graduation some clinicians learn considerable pharmacology in the study of therapeutics. Many, however, find the subject too large and are unable to launch their therapeutics on a sound basis and as a result too often drift into therapeutic nilism. In many cases where it is impossible to make a definite diagnosis, the physician can only prescribe to the best of his ability. Therefore, in order to be reasonably sure that the majority of our graduates will be successful therapeutists an adequate amount of time should be allotted to the study of pharmacology and materia medica.

The medical course is already overloaded, but it is hoped that some way will be found whereby sufficient time can be devoted to the subject which forms the basis of a great part of the practice of medicine. In the meantime, let us not lose sight of the fact that one of the differences between the regular school of medicine and the irregular schools is that the former relies mainly upon drugs, while the privilege to use them is denied the latter.

Roentgenology and the Practising* Physician

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RADIOLOGY may be considered as an infant among the sciences but like the rapid growth of the child in its embryonic stages, the organized body of knowledge that has accumulated on this subject has reached the parturient period and must be dealt with by the practising physician. Radiology as a branch of medicine deals with the diagnostic and therapeutic application of radient energy which is a form of energy emitted by all bodies in proportion to their temperature, by undulations in the luminiferous ether in the form of heat, light, Roentgen rays, radium rays, ultra-violet rays and other spectral radiations. Partly as a result of war psychology in England and partly for the sake of euphony the word radiology is generally employed when roentgenology is intended. It is to the latter field that the present discussion will be confined.

X-rays were discovered by Roentgen in 1895 and, although that is only a short time ago, the major developments in this study have been since 1907. Previous to this, information was limited, due to the difficulty in producing the rays. The period between 1910 and 1920 was featured mainly by improvements in the apparatus and in technique which were reflected in a wide extension of the methods to numerous phases of clinical practice. During the last decade, however, roentgenology has advanced more rapidly than ever before; more rapidly, indeed, than any other branch of medicine, and from present indications such progress appears likely to continue for some time.

The average physician cannot boast of great familiarity with the conduct, or of adequate comprehension of the possibilities of diagnostic and therapeutic aids to be obtained from x-ray procedures. As Swanberg[1] has attempted to show, the average practising physician secured his medical education in the few years following the first announcement of the discovery of x-rays when the science was not understood and that his knowledge of the subject is limited in most cases to what has been obtained due emergency cases of the past few years. However, to-day the need of information to the practitioner is imperative, the sources of knowledge are abundant and the value of roentgenology is unlimited.

Roentgenology is essentially a consultation type of practice, and the roentgenologist, whose activities are confined to the uses of x-rays, is dependent to a great extent upon the general practitioner. It is partly because of this situation, but particularly from the standpoint of his own practice, that a doctor should endeavour to gain an understanding

*The McGuffin Prize Essay for 1934.

of this subject. He should know about a means of diagnosis and treatment upon which he must call frequently for assistance. Seldom does a physician see a clinical journal that does not contain important references to x-ray diagnosis or therapy. At the present time, x-ray diagnosis is applicable to practically every branch or specialty of medicine and it is of absolute importance to the specialist, such as the paediatrician, orthopaedist, bronchoscopist or laryngologist. Apart from being indispensable to the surgeon from a practical point of view, the x-ray is in some cases a legal necessity.

The physician should know of the value and limitations of the science before requesting the roentgenologist to investigate a patient and he should not depend on the aid of roentgenology at the expense of ordinary clinical examinations. He should be able to judge dependable work and choose between the accepted and unscientific methods of treatment. He should be able to check the roentgenograms and thus indirectly learn the necessity of early diagnosis. He must know the importance of radiation in treatment, especially in cases of neoplastic diseases and realize the dangers of excessive exposure to x-rays.

The remedy for the general practitioner's inadequate knowledge of roentgenology may be that suggested by Case[2] namely, a campaign of education. He proposes the teaching of roentgenology to hospital internes and outlines a definite course of study under which heads the practitioner also might increase his familiarity with the subject:

(a) A study of the nature and origin of x-rays.
(b) The scope of x-ray examinations.
(c) A thorough understanding of x-ray interpretation.
(d) A knowledge of x-ray terminology.
(e) Complete information concerning the technique and the value of x-ray diagnosis and therapy.

Swanberg,[1] in his discussion on the education of the practising physician as to the value of roentgenology, advances the idea that the general practitioner is the one who determines to a large degree which cases will or will not receive the benefits of roentgenological treatment and he should consider it his duty, therefore, to have a profitable understanding of the subject. A young practitioner, remarking upon the worth of the science said, "A week never goes by without wishing for an x-ray; for instance, a barium series of G. I. tract, a pyelogram, an x-ray of the sinuses, gall bladder, etc. One requires it as a measure of defence particularly in fracture work in case a lawsuit should develop. A diagnosis is only a presumption until the x-ray provides confirmation. Nevertheless, one should not rely entirely upon the x-ray for a diagnosis. A carefully-taken history and a complete and thorough physical examination along with the necessary laboratory tests are essential." In his discourse on the ethics of the roentgenologist, Perry[3] points out that the chief desires are to develop the science and to co-operate with the doctors and dentists.

There are several ways in which information may reach the prac-

titioner and he should do all within his power to work with the roentgenologist for the betterment of his own knowledge. Papers are being presented before medical societies by men familiar with the subject, who are willing to discuss in simple and clear terms the problems which may be solved by the use of x-rays. Practically every medical journal publishes articles which are meant to acquaint the practising physician with the new discoveries in the fields of x-ray diagnosis and treatments. Joint meetings of the roentgenological and medical societies are arranged and these should become more numerous because of the benefits to be derived by both groups. Such meetings bring two specialties which must work hand in hand for the benefit of humanity in close contact and should convey to the practitioner a realization of the importance of roentgenology in his own work.

The discovery of roentgen rays came at a time when the development of surgery, made possible by the revelations of Pasteur and Lister, was in full swing. It is but natural therefore that the first utilization of the discovery should have been in relation to surgery. Moreover, since the most striking feature of roentgen rays is their power to penetrate tissues in proportion to their density, it is not surprising that surgeons should have realized the significance of this new and valued method of studying the skeleton and the diseases pertaining thereto. For a short time such investigations occupied surgical attention exclusively and led to observations which amazed equally, the surgeons and the public. Within a few months, however, it became obvious that, besides the uncanny property of traversing tissues and affecting the sensitive emulsion of a photographic plate, the rays also had a potent and destructive influence upon tissue cells. The succeeding years were fruitfully employed on the one hand, in extending the diagnostic application of the method and, on the other, in determining the action of the rays on various tissues and organs and their possible influence upon different pathological conditions. It is in these two fields that roentgenology is of primary value to the practising physician.

Roentgen ray diagnosis, although unfamiliar to the average physician in its utility, should be understood because of its extensive application. There is little necessity for insisting upon the importance of roentgen ray examinations of bone and joint lesions, for this is the field in which roentgenography first proved its value. It should be an invariable rule to secure roentgenograms, in every case of suspected bone injury. The diagnosis of fractures should always be made from plates or films and never from the appearances on the roentgenoscopic screen because of insufficient detail in the fluoroscopic image and the danger of over-exposure.

Many diseases may be diagnosed accurately as has been pointed out by Christie.[4] Some of the more important of the bone conditions have very characteristic diagnostic features, such as:

(1) Periosteitis—dense shadows due to sclerotic changes.

(2) Tuberculosis—bone and joint indistinct due to the absence of lime salts.
(3) Syphilis—thickening of the cortex of the bone.
(4) Rickets—flaring of the bones at the epiphyseal points.
(5) Arthritis—atrophic and hypertrophic alterations in the cartilage and bone.
(6) Scurvy—localized areas of bone destruction.
(7) Tumours and cysts—give typical shadows.

The diagnosic value of x-rays is far more extensive than in association with bone conditions. Thousands of practitioners do not know that pneumonia may be easily and quickly diagnosed by roentgenological examination, or that gastric ulcers and cancer can be successfully diagnosed earlier by x-ray than by any other single method of examination. Some of the diseases which are recognizable by Roentgen study are aortic aneurysm, congenital heart disease, pleurisy, lung abscess, hernia, cystic kidney, several types of tumours, tuberculosis, etc. These are only a few of the many diseases which are frequently found by the practising physician but they should serve to impress upon him the importance of this means of verifying his own less accurate conclusions.

Roentgenotherapy is the second outstanding use of this remarkable science and should be thoroughly understood, as regards its limitations and value, by every practitioner if his patients are to receive efficient treatment as offered by this newest branch of medicine. Probably the largest single group of diseases which may be relieved are those of the skin. Among the most important ones are acne vulgaris, recurrent boils, carbuncles, ringworm of the scalp and beard, certain types of eczema, scrofuloderma and many others. X-rays have a favourable influence upon leukaemia and may be used in the reduction of the enlarged glands in Hodgkin's disease. Several other conditions which may be treated with beneficial results are tuberculous adenitis, tuberculous peritonitis, metropathic haemorrhages, hyperthyroidism and hypertrophy of the prostate. It is due to the occurrence of these diseases in his practice that the physician should familiarize himself with ths form of therapy.

Another application of x-rays is in relation to foreign bodies. It was demonstrated in the world war that roentgenoscopy was the most effective method of locating and assisting in the removal of foreign bodies. This method should be used in civil practice because less manipulation of the injured part is required; it may be used at the time that the surgeon is removing the foreign body; it permits of a rapid survey of more distal parts and one is able to show any variation in the location of the body. Localizations of foreign bodies by this process, although not entirely within the scope of the general practitioner, must be understood by him if he is to adequately serve patients who have acquired such conditions.

The science and practice of roentgenography and roentgentherapy have developed so rapidly since the discovery of the new rays that it is not an easy matter for the physician to keep pace with the develop-

ments or to appreciate to the full either the help they may afford him or their limitations. Especially is this true of the older practitioner, who was already at work when Roentgen published his discovery in 1896. The young physician is familiar with x-rays and perhaps is too prone to rely upon roentgenography to establish a diagnosis, instead of making careful physical examination. The doctor who is engaged in a busy practice is the first to come across the patient to whom these developments offer enhanced chances of relief or cure; therefore, it behooves him to keep himself acquainted with the advances and cultivate a working knowledge of their uses and practical application.

The relationship between the general practitioner and the roentgenologist is that which exists between the practitioner and the consulting physician or surgeon. The physician should acquaint himself with the points to which attention is necessary in order that a roentgenographic examination may result in the greatest possible amount of satisfaction and benefit to the patient, roentgenologist, and the practitioner. He should provide the roentgenologist with the case history; be able to prepare the patient for the examination; distinguish between good x-ray work and poor x-ray work; and understand the interpretations of the roentgen expert.

The practitioner must accept roentgenology as a science of primary importance to him and realize the need of information concerning the subject knowing that roentgenology is of value in:

(a) Confirming a diagnosis.
(b) Determining the extent of a bone or joint lesion.
(c) Defining the extent of a disease.
(d) Detecting foreign bodies.
(e) Treating certain diseases.

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Photophthalmia*

A Report of a Case

By Frederick Adams, M.D.
Seattle, Washington

THE acute inflammatory reaction of the superficial parts of the eye due to short-waved light, called photophthalmia by Sir John Parsons in 1913, has been known and recognized from very early times.

Following the introduction in 1879 of the electric arc for furnaces and lighting, the occurrence of typical symptoms of the condition became quite well known. Today, they are probably to be met with most frequently in persons exposed to the short-circuiting of a high tension electric current, electric arc welding, in workers who use the oxyacetylene torch, or who are subjected to source of light which is rich in short waves.

Ordinarily, sunlight does not produce symptoms of photophthalmia. When, however, the direct light of the sun is reinforced by a dazzling reflection in sufficient intensity, as from the sea, the desert or a snowfield, the condition may develop.

The most common form of the disease which is encountered is that experienced after exposure to bright sunlight on a snowfield when it is called, usually, "snowblindness." This is an unsatisfactory term since the photophthalmic symptoms are not caused by the snow but by the solar energy which is partially reflected by the snow. Neither is there any blindness apart from the dazzling sensation. Amblyopia and a central colour scotoma occur occasionally.

A large amount of literature has accumulated on this subject. My only personal experience concerning it occurred two winters ago while driving through the Blue Mountains of Idaho. It was a crisp, clear morning and the bright sun was intensified by the snow which covered the ground and the fir trees. We had been driving for several hours before any irritating symptoms were experienced. Then, on consulting my road map which I knew depicted the main highway with a rather wide bright line, I noticed that the red line had disappeared. The red colour had changed to a moss green and remained so for an hour after protecting glasses had been worn. The Alaskan natives have solved the problem of so-called "snowblindness" by having a piece of wood or horn strapped around the head with a thong and in which are cut two horizontal or vertical stenopoeic slits opposite the eyes. The snow then can be viewed with impunity, in the same way as the sun is examined during an eclipse through a pin-hole disc.

The biological action of light upon the eyes, as elsewhere in the body, varies with the wave length. The longer waves, by increasing

*Presented before the Puget Sound Academy of Ophthalmology and Oto-laryngology, Seattle, Washington, February, 1934.

molecular movement, produce mainly a thermal effect. The shorter ones, whose frequencies correspond to the intramolecular oscillations, by increasing atomic motion produce molecular disintegration with consequent photo-chemical and photo-electrical changes. Unless radiant energy is absorbed, it cannot exert any effect, pathological or otherwise, upon the substance through which it is passing. These facts have been arrived at by the experimental production of photophthalmia, the studies of Parsons, Martin, Elder and others all seem to agree in the main and they confirm each other's findings. Much has been reported on damage to the cornea, lens and retina, but I fail to find any reference in the literature that goes beyond these structures. Most writers describe the subjective symptoms which are quite familiar to many physicians. Cases of actual retinal injury are rare. After exposure to arc lights, and in electric welding, diminution of vision, contraction of the visual fields and scotomata are relatively common while erythopsia and xanthopsia occur more rarely. Objectively, there have been reported oedema of the retina, pallor of the disc and macular changes.

CASE REPORT

It is my pleasure to present a case that goes quite beyond the limits of the cases so far described. Normal vision was reduced to 20/200 in 30 days. In 60 days the vision was reduced to fingers at four feet. In another 30 days a minus 10 diopter sphere brought the vision up to 20/60 with difficulty. At the present time the vision is 20/100. A minus 200 diopter sphere gives the patient 20/20 and he seems to have a chance of still further improvement.

This young man, an auto mechanic, presented himself for examination in July of last year. He said that his eyes had been inflamed for four days following the use of an acetylene torch. He had not handled the torch himself but had been acting as a helper for a period of an hour and a half and he had used no protection glasses.

He had conjunctivitis with slight oedema of the eye lids. The nose and throat examination were negative. He was a healthy, well developed young man and stated that his vision was normal in each eye according to a recent insurance examination. The Wasserman test on the blood was negative.

Two days later the right eye cleared considerably but the left one showed an increasing oedema of the lids with intense photophthalmia and blepharospasm. The pupil was dilated, but an examination of the fundus revealed no pathology. Vision in each eye was 20/20. Still later the oedema increased and some proptosis was noted. The visual acuity was not recorded.

One month after the first examination, the patient complained of blurred vision and an ophthalmoscopic examination showed some oedema of the retina. Marked proptosis was present.

Two months after the first examination the vision was reduced to fingers at four feet. There was still considerable oedema of the lids and the pain was so severe that a sedative was required. Proptosis and

conjunctival injection persisted. Examination of the fundus at this time showed a cloudy vitreous humour but with a minus seven diopter sphere the optic nerve and vessels were distinguished, with some oedema of the retina. The lens was clear.

From then on, a gradual improvement was noted. The pain and swelling diminished, the proptosis lessened and after three months the patient's vision was 20/60 with a minus 10 diopter sphere.

One month later a minus 6 diopter sphere gave him 20/30. In 30 days more a minus four diopter sphere was sufficient for the same amount of vision.

At no time was there any increase in intra-ocular tension.

After six months the fundus was apparently normal and the vision was improved by one diopter. A gradual improvement continued for two months more and the last refraction gave him 20/20 with a minus two diopter sphere.

DISCUSSION

Just what happened to the various structures of this injured eye is a matter of some conjecture. Theoretically, any one of the following or any combination of them may have been the aetiological factor in bringing about the degree of myopia which occurred.

1. Abnormally increased length of the eye. (Axial myopia.)

2. Abnormal curvature of the refractory surfaces; increased curvature of the cornea or increased curvature of one or both surfaces of the lens.

3. Increased refractive index of the media or a possible forward displacement of the lens.

SUMMARY

1. A case of photophthalmia which caused a temporary high degree of myopia is reported

2. Photophthalmia is produced by short-waved light and reflection of the sun's rays upon water, snow or sand.

3. The vision is reduced.

4. The cornea and the lens are involved but retinal damage is unusual.

Familial Icterus Neonatorum Gravis*

By IRVING BERNSTEIN, M.D.
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ICTERUS neonatorum gravis which was described first by Pfannensteil[1] in 1908, is a rare and usually fatal condition. It appears in several of the new-born of a family, as a rule in succession but not necessarily so. One or two members of a family so affected may escape. Jaundice appears on the first day after birth and rapidly deepens until the skin is a yellow-brown colour. Occasionally, the child is born jaundiced, or the discoloration may appear a few hours after birth. Cases of icterus neonatorum gravis are reported in the literature as familial or sporadic. However, the common occurrence in successive pregnancies leads to the inclusion of the term "familial" as the descriptive title of the disease but sporadic cases are recoginzed as well.

CASE REPORTS

Case 1: Baby T. was a full term female child who was delivered normally and spontaneously and weighed seven lbs. 13 ounces at birth. She is the fifth child of healthy parents whose blood Wassermann tests are negative. Two previous infants were jaundiced soon after birth but both survived; one was deaf and dumb, however, and showed evidence of central nervous system involvement.

In the case of Baby T. jaundice appeared on the first day and became progressively worse until at the time of death on the third day, the child was deeply bronzed. The baby was drowsy, took to the breast poorly, and lost weight. The urine was deeply coloured and stained the napkin a brownish colour. The stools appeared to be normal and contained bile, so congenital obliteration of the bile ducts was ruled out. The temperature varied from 97° F. to 98° F. but before death it rose to 99.2° F.

Physical examination was entirely negative except for a generalized deep jaundice which involved the sclerae and nails. Before death ensued the third day, the infant had difficulty in breathing and there was a rattle heard in the throat and a slight convulsion occurred.

At autopsy the gall bladder and bile ducts were found to be normal and the liver and spleen were not enlarged or hardened. There was no sign of haemorrhage or sepsis. Thus, no obvious cause for the jaundice could be found. Microscopic examination of the liver showed scattered areas of haematopoietic foci. The liver cells contained iron pigment and were stained with bile and many of the bile capillaries contained bile thrombi. The spleen, kidneys and other organs were stained with bile and showed evidence of the deposition of iron pigment, also some haematopoietic foci.

*Presented at a staff pathological conference, St. Francis Hospital, on November 10th, 1934.

Case 2: Mrs. O. A. has had six children none of whom are living. Five of these lived for only three to ten days and died with deep jaundice. The last baby who died of jaundice in this way was a female child weighing 7 lbs. 6 ounces. The child developed icterus several hours after birth which gradually increased until death on the third day. At no time was the temperature higher than 98.6° F. The stools were normal but the urine was a brown colour. Post-mortem examination did not reveal any evidence of sepsis, obliteration of the bile ducts, or syphilis. There were, however, numerous haemorrhages throughout various parts of the body.

AETIOLOGY

The exact aetiology of this condition is undetermined but it is known to occur in many races and it is of equal frequency in both sexes. Lagreze[4] and Rolleston[6] believe that icterus neonatorum gravis is due to a congenital intoxication of the foetus through toxic maternal products. Knopfelmacher[5] is of the opinion that it should be considered as a type of septic jaundice and suggests that its repeated appearance in a family is incidental. Yllpo[7] believes that a functional insufficiency of the liver tissue exists which allows the entrance of bile into the blood with death resulting from cholaemia. Hoffman and Hausman[8] think that the condition is due to a toxin which causes haemolysis. They report a series of five cases with recovery. Later symptoms pointing to an involvement of the nervous system are evident. Greenwald and Messer[9] report a case with central nervous system involvement manifested by spastic diplegia and idiocy.

Hampson[10] belieevs that the delay in the assumption of hepatic function is marked and that a great deal of haemolysis occurs due to the fact that an anti-haemolytic hormone is not produced. As a result of the destruction of red blood cells toxic products are formed which, especially in the infant, affect the liver. Thus, there is produced a vicious cycle which kills the infant in a very short time.

Huwer[11] expresses the belief that nuclear icterus "*Kernikertus*" which is very similar to icterus neonatorum gravis except that the icteric staining is found in the nuclear region of the brain and is caused by a congenital or hereditary abnormality of the haematopoeitic system of the foetus which results in the intravascular destruction of the blood cells.

Abt[3] in a recent study of icterus neonatorum gravis has confirmed a close association to exist between nuclear icterus, hydrops congenitalis universalis and anaemia of the new-born, as demonstrated by a similarity in the microscopic pathological findings. Extensive extramedullary haematopoiesis and haemosiderosis are common to all three of the above mentioned conditions. On this he has based his belief that the underlying disturbance is an embryonal persistence of haematopoiesis in various organs.

SYMPTOMOLOGY

At birth, the infant appears to be normal but within a few days

it dies as a result of a grave and progressive icterus. The extremely rapidly developing and pronounced jaundice is the most striking sign of the disease, in contra-distinction to the physiological type of icterus which appears generally after the third day.

The child has a feeble cry, seems drowsy, takes to the breast poorly, loses weight and becomes anaemic. The stools are normal in colour, the urine is dark and contains an excess of bile. The liver and spleen are usually moderately enlarged but not always so. The temperature is either sub-normal or normal, which eliminates the possibility of an infection as the cause of the jaundice. Haemorrhage, especially from the umbilical cord and mucous membrances, may occur as a terminal event. The child usually dies between the third and the tenth day either with a convulsion or in coma. Post-mortem examination reveals no obvious cause for the jaundice.

PATHOLOGY

The gross anatomical picture of icterus neonatorum gravis is characterized by a deep yellow-green staining of practically all of the internal organs and the serous membranes. Small petechial haemorrhages in these parts are commonly found.

The liver shows the most pronounced microscopic change in that a great number of embryonic blood islands are to be found scattered throughout the hepatic tissue. These haematopoietic centers consist of erythroblasts, large immature basophilic proerythroblasts and normoblasts. The liver cells are stained deeply with bile pigment and there are areas of liver cell damage, marked by cell necrosis and fatty degeneration and the Kupffer cells contain considerable amounts of iron pigment. The spleen and kidneys show marked accumulations of iron pigment as well as haematopoietic areas. These are found also in the thymus, the pancreas, adrenals and other organs. The bone marrow usually shows hyperplasia.

The pathological findings mentioned above are in keeping with the observations of erythroblastosis in icterus neonatorum gravis. The immense increase in the number of red blood cells in the blood stream was first shown by Buhrman and Sanford.[2] Normally, in the new-born counts of 100 red cells show five to 10 erythroblasts but the above investigators recorded cases with 140,000 to 213,000 erythroblasts per cubic millimeter.

Abt[3] reports several cases in which the most characteristic and important feature of the blood picture was an enormous increase of immature and nucleated red blood cells. He found from 50,000 to 100,000 of these per cubic millimeter and they consisted of immature red blood cells with mitotic figures, erythroblasts and normoblasts.

DIFFERENTIAL DIAGNOSIS

Physiological jaundice, which is known also as idopathic or simple jaundice, is easily differentiated. The icterus appears after the third

day and is noticed first on the face, chest and then in the sclerae. It occurs in 30 to 80 per cent of new-born infants, and is believed to be more common in premature and feeble babies. The jaundice lasts one or two weeks, increasing the first two days and then gradually diminishing. The child is healthy and normal in all other respects. No treatment is necessary and death does not occur.

Congenital obliteration of the bile ducts must be ruled out. This condition likewise occurs in several members of the same family. Boys are more commonly affected than girls. The jaundice manifests itself on the second or third day and is progressive. Occasionally, it may not appear until the second or third week. The stools are light in colour and the urine is dark. Haemorrhage often occurs from the mucous membranes. The liver is hard and shows evidence of biliary cirrhosis. The infant becomes emaciated and may die in convulsion. However, it is often surprising how fit the child may appear until quite late in this disease, which is an important point in the diagnosis. Death may occur in a few weeks or the condition may linger on for 8 to 10 months. Verification of the anomaly is made at the time of the autopsy.

Congenital syphilis, although commonly mentioned as a cause of jaundice in the new-born, is rarely encountered. In syphilis, other signs and symptoms of the condition are present. A positive Wassermann test from the mother and the cord is obtainable. The liver is enlarged but it is not as hard as in congenital obliteration of the bile duct. The jaundice comes on early and is progressive. The stools are pale but they often contain a certain amount of bile. The urine is dark in colour. Haemorrhages occur and the individual becomes profoundly cachectic. Good results can be obtained by mercurial inunctions.

In infective jaundice there is an associated infection of the umbilical cord, intestine or elsewhere. In addition to the local signs, the infant is obviously ill at the time of the onset of the jaundice. It is wakeful, irritable and refuses food. The temperature is raised and there is often cyanosis.

Acholuric jaundice is not usually seen during the first few days of life. If, however, it does occur the infant is not usually ill although there may be a slight rise in temperature during the periodic exacerbations which exist in this condition. The patient is more icteric than sick. The spleen is enlarged and during the exacerbation, the liver is enlarged. In spite of the name given to the condition, the urine may contain bilirubin, but usually there is only an excess of urobilin. Examination of the red blood cells shows a diminished resistance to hypotonic saline solutions.

In erythroblastic anaemia of Cooley the age of onset is later, usually at 1½ years of age and the condition develops only in children of Greek or Italian parentage. Although there is a vague yellowish tint to the skin, jaundice is not a feature. The abdomen is greatly distended due to enlargement of the spleen and the liver. There are a great number of nucleated erythrocytes present in the blood as in icterus neonatorum

gravis. Also there are characteristic roentgenological changes in the bones. No case of this disease has been known to recover.

Blockage of the billiary passages by stones may cause jaundice in the new-born infant but instances of this are rare. Still reports 10 cases, seven of which were jaundiced. Skemp reports the finding of gall stones at autopsy in a child who died of some unrelated cause.

PROGNOSIS

The outlook is extremely grave. Figures from various authors show a mortality of from 77 to 85 per cent. Hampson[10] states that with serum therapy the prognosis is good provided the treatment is started early.

PROPHYLAXIS AND TREATMENT

Pittfield[12] recommends as prophylactic measures large doses of calcium chloride and a vegetable diet for the mother during pregnancy. Rolleston[6] gives urotropine and sodium salicylate during pregnancy to prevent bile stasis and as an intestinal disinfectant. Smyth[13] reports an attempt at prophylaxis in a woman whose six infants developed icterus neonatorum gravis. He hospitalized this patient throughout pregnancy and kept a careful supervision and a regulation of her diet. Seven days before term a Caesarean section was done to avoid trauma to the infant during labour. The child remained normal for 24 hours then became drowsy, progressively jaundiced and died 70 hours after birth.

Berheim-Karrer and Grob[14] have reported the daily feeding of 100 grams of liver to the mother during the last 10 weeks of pregnancy. In the case of a woman who had previously given birth to two babies who had died of icterus neonatorum, a normal child was born which did not develop jaundice. However, no conclusions can be drawn from one isolated case as this treatment was tried in Smyth's case without success.

Blood transfusions have been given with and without cure. Kramszytk[15] reports recovery in a case after the intramuscular injection of 10 c.c. of whole blood.

Hoffman and Hausman[8] suggest feeding the infant skimmed breast milk from a wet nurse while Klemperer[16] recommends the use of glucose intravenously. Hampson[10] reports 17 cures in 18 cases following the use of the mother's blood serum. He injects 10 c.c. daily until improvement occurs.

Splenectomy has been attempted by Cooley[17] with unfavourable results. Liver extract has been used and parathyroid has been recommended to mobilize the calcium in the blood stream to help prevent the haemorrhages.

The author wishes to thank Dr. Wolf for his help, especially with regard to the pathological aspects of this subject; also Dr. A. Skemp and Dr. Evans.

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END OF INFANTILE PARALYSIS IN SIGHT, SCIENTISTS STATE

Pittsburgh.—The possible end of infantile paralysis was forecast at the American Association for the advancement of science to-day.

The results of two different vaccines, one discovered in Philadelphia, the other in New York, gave this promise. Both are speedy, one showing immunizing effects in a little over three days, and both within a week.

This indicates that both may possess the power to stop epidemic outbreaks before they become serious.

The Philadelphia vaccine results on 25 children were reported by John A. Kolmer, M.D., of Temple University, none had infantile paralysis, but they were poor subjects for the vaccine tests because most of them were convalescing from other diseases.

Nevertheless their blood after vaccination became so strongly resistant that it successfully neutralized human infantile paralysis virus from the 1934 California epidemic. This means that in a test tube the children's blood took all the virulence out of the agency that caused the infantile paralysis.

Experiments with animals indicate that this neutralization test is "valid," a sign of real immunity gained from vaccination.

Dr. Kolmer said that 15 of the children were without this protective substance before vaccination. Eleven of them showed large amount of antibody afterward, ten already had the "intiviral" substance in their blood but these showed "considerable increase" in the protective substance after vaccination.

None of the children showed ill effects of vaccination. The ages ranged from eight months to 15 years. Vaccination of a few adults has showed that they react like the children, with increase of immunizing antibodies.

"It is believed," Dr. Kolmer said, "that the vaccine is now ready for vaccination of human beings and especially children against poliomyelitis and particularly during epidemics."

He said it is not known how long immunity will last after this vaccine, but that it has lasted for more than a year in vaccinated monkeys.

The vaccine is made of spinal cords of monkeys with infantile paralysis. A solution containing four per cent. of the cord is treated with one per cent. sodium ricin oleate.

—*Sydney Post Record*, Dec. 26, 1934.

Medical Men In Poetry---II

By W. P. TEW, M.B. (Tor.)
London, Ontario

JOHN KEATS (1795-1821)

JOHN KEATS was born on October 31st, 1795. Left an orphan, his early days were carefully guided and his life's work was later directed by good advisors. He never obtained a University degree but he was apprenticed to a country surgeon and it was during this period of his life that he showed a keen interest in literature. Although small in stature, his countenance always spoke of alertness and serious beauty. He was forever cheerful, modest, honourable, and kind. Early in life he was stricken with pulmonary tuberculosis from which he died in his twenty-fifth year while he was in exile in Rome. He did not live to realize the fate of his third and last great work.

What is the outstanding feature of Keats' poetry? Evidently it is the musical and sculptural effects which he could accomplish with words. He deliciously presents the unconceivable without strain. Keats is said to be the standard bearer of revealed beauty among the writers of England, and carries her colours triumphantly into our actual air. In his "Ode to a Nightingale," this is particularly manifest as instanced in verses one and three:

"My heart aches, and a drowsy numbness pains
My sense, as though of hemlock I had drunk,
Or emptied some dull opiate to the drains.
One minute past, and the Lethe-wards had sunk:
'Tis not through envy of thy happy lot,
But being too happy in thine happiness,—
That thou, light-winged Dryad of the trees,
In some melodious plot
Of beechen green, and shadows numberless,
Singest of summer in full-throated ease."

"Fade far away, dissolve, and quite forget
What thou among the leaves hast never known,—
The weariness, the fever and the fret,
Here where men sit and hear each other groan;
Where palsy shakes a few sad, last gray hairs,
Where youth grow pale, and spectre-thin, and dies;
Where but to think is to be full of sorrow
And leaden-eyed despairs,
Where Beauty cannot keep her lustrous eyes,
Or knew Love pine at them beyond to-morrow."

We have no particular records of his work during his apprenticeship with his surgeon teacher. It seems that due to his broken health

he was unable to carry on a medical practice and it was while he was living more or less in solitude attempting to regain his health that he did his best writing. It is a blessing for the world probably that he did not complete his medical course, but at the same time it is regrettable that his life was so short. It seems almost humanly impossible for one to give such full expression of thoughts and feelings in the way Keats did prior to his death at 25 years of age.

The exact origin of the Keats family is not definitely known. John's father, Thomas Keats, came from the West of England to London as a boy and worked as a groom in a livery-stable kept by a John Jennings in Finsbury. Seven years later, in the early part of 1795, Thomas Keats married his employer's daughter, Frances Jennings, then in her twentieth year. Soon after the marriage Mr. Jennings retired and moved into the country, leaving the management of the livery-stable in the hands of his son-in-law, Thomas Keats. At first the young couple lived at the stable, at the sign of the "Swan and Hoop," in Finsbury. Here their eldest child, John Keats, the poet, was born prematurely on either the 29th or 31st of October, 1795. A second son, George, was born on February 28th, 1797; a third, Tom, on November 18th, 1799; a fourth, Edward, who died in infancy, on April 28th, 1801; and a daughter, Frances Mary, was born on June 3rd, 1803. In the meantime the family had moved from the stable to a house in Craven Street, City Road.

The brothers grew up with an intense fraternal feeling and a strong vein of family pride. It was a pride while looked forward and not backward. They were all anxious to elevate the family name and bring credit to it. Unfortunately, they had little interest in the past and left no record of their family tree. Friends of the family claimed that Thomas Keats, the father, came from Devonshire. Frances Mary, the daughter, remembered hearing as a child that her father came from Cornwall, near Land's End. There is no positive evidence concerning this point. The name of Keats is widely distributed in various counties of England and it is derived probably from the adjective "kete," of Scandinavian origin, meaning bold and gallant.

In features, stature and manner, John resembled his father. Frances Keats, John's mother, was tall, of good figure, with a large oval face and a sensible deportment. She is said, however, to have been an impulsive woman passionately fond of amusement, and is supposed to have hastened the birth of her eldest child, John, by some imprudence. Thomas and Frances Keats were ambitious and wanted their boys to be educated at Harrow. This, however, proved to be beyond their means, so they decided to send them to a school at Enfield, kept by a Mr. John Clarke. This was a school of good repute where Mrs. Keats' brothers had been educated. It was situated in beautiful surroundings in a spacious garden at the lower end of the town. The school-house had been built for a rich West Indies merchant, in the finest style of early Georgian classic architecture.

John Keats had just nicely started school when his father died. John was at this time nine years of age. Within 12 months his mother had taken a second husband, Mr. William Rawlings, a stable keeper of Moorgate. This marriage turned out unhappily and they soon separated. The circumstances surrounding the separation are not known. The brothers were never known to mention their stepfather. Mrs. Rawlings went with her children to Edmonton where they settled in the house of her mother, Mrs. Jennings, who had been left a widow. The family was well enough provided for, Mr. Jennings having left a fortune of over £13,000. He bequeathed a capital yielding £200 a year to his widow and one yielding £50 a year to his daughter Frances and £1,000 to be held in trust for the boys and divided among them when they became of age.

During his early school days, John Keats seemed more fond of fighting than acquiring an education. This, however, was purely on the surface, because from his letters to his family and friends we find that he was familiar with the best books of that day. He frequently mentioned passages from Shakespeare. In the midst of his studies Keats lost his mother, who had been disabled with rheumatism for several years and finally died at the age of 35 with tuberculosis. A Mr. Abbey had been named guardian over the Keats children and under his authority John was taken from school at the end of the summer term in 1811, when he was just under 16 years and was made to put on the harness for the practical work of life. He was bound as an apprentice for the customary term of five years to Mr. Thomas Hammond, a surgeon and apothecary of good repute, at Edmonton.

The years between 16 and 20 are probably the most critical of a young man's life. During this period of their lives other London-born poets, such as Spencer, Milton, and Gray, were profiting by the discipline of Cambridge and the Muses; but Keats had no more help than that of the regular training of an ordinary apprentice in a suburban surgery. He continued his reading by making use of a nearby school library.

On October 1st, 1815, one month before his twentieth birthday, we find his name entered on the register of Guy's Hospital. Four weeks later he was appointed dresser to Mr. Lucas, a surgeon. At the end of six months he re-registered for a further term of 12 months. In July, 1816, he presented himself for the final examinations, which he passed with ease and credit and obtained his license to practice. Early in the spring of 1817, he decided to abandon medicine and devote his time to poetry.

As a student he never satisfied his teachers that he was really interested in medecine. His last operation was the opening of a man's temporal artery. Subsequently it occurred to him that during this operation his mind was on something else, namely poetry. He decided then and there to give up medicine. Mr. Lucas, his surgical teacher, seemed to have few qualifications for his post. He was a poor teacher and his operations were usually badly performed. The best of what

Keats learned in medicine evidently came from Astley Cooper, who was then at the zenith of his career. During lecture hours Keats would occasionally scribble little lines, of which the following is a sample:

"Give me women, wine and snuff
Until I cry out 'Hold! enough,'
You may do so, sans objection
Until the day of resurrection."

At this time Keats wrote to a personal friend, stating that he had fears that his studies and surroundings would stifle the poetic faculty in him. He continued to write an occasional verse such as, "Woman, when I behold thee," and "Happy is England." On May 5th, 1816, a gentleman by the name of Leigh Hunt, editor of the "Examiner," printed a sonnet written by Keats, entitled, "O Solitude, if I with thee must dwell." This was Keats' first appearance in print. In the autumn of that same year Chapman's folio edition of Homer fell into his hands and this stimulated his poetic interest.

Leigh Hunt had been quite influential in directing the literary efforts of Keats. The friendship between them grew more intimate and Keats went to live at Hunt's home, the "Little Cottage." He continued his writings and Hunt continued to expound them. Through Hunt, Keats met Robert Haydon, John Hamilton Reynolds and, subsequently, Shelley.

Thus the obscurely-born and half-schooled young medical student and orphan son of a Finsbury stable-keeper found himself at the age of 21 well launched in a world of art, letters and liberal aspirations. He was barely an inch over five feet tall; possessed a shapely head which was set off by thickly clustering gold-brown hair. His features were powerful, finished and mobile, with a bold and sensitive expression. Haydon said, "Keats was the only man I ever met who seemed and looked conscious of a high calling, except Wordsworth." He was in his glory out in the open. He loved the sunlight, the moonbeams, the flowers, the birds, the rustle of the leaves and the sighing of the breeze.

During the summer of 1817, Keats produced his poem "Sleep and Poetry," which created favourable comment in the literary world. He had no difficulty then having his works published. He went to Oxford, by invitation, to visit Benjamin Bailey, and remained with him for several weeks. During this time he completed his third book, "Endymion." Keats would write and Bailey would study in the same room, often at the same desk. He wrote on an average of 50 lines a day. When the book was completed Keats left for London and on his arrival there learned with grief that his old friend Leigh Hunt had been somewhat disloyal during his absence, which was the beginning of an unfortunate separation of two very close friends.

In the latter part of 1818, Keats was paying considerable attention to a young lady, Fanny Brawne, the daughter of a West Indies merchant who had died and left his widow quite well off. The majority of Keats'

personal friends were not particularly pleased with the rather serious attention which he was paying to Fanny. She was 18 years of age; possessed a slight, shapely figure, was quite lively, with a manner bordering on boisterousness. She was high-spirited, inexperienced and self-confident. It was evident that she never realized what manner of man Keats was, nor how high and privileged was the charge committed to her. It was about this time that Keats lost his brother George, whose death deprived himself of his nearest and dearest friend. Just prior to his brother's death, Keats and Brown took their famous Scottish tour but Keats was brought home with tuberculous laryngitis. At this time he wrote "Isabella," "The Eve of St. Mark," "To Fanny," and "The Ode to a Nightingale."

Keats' health began to fail in early life and he was advised to spend a winter in Italy, and his old friend Severn was chosen to accompany him. The expense of the trip was troubling Keats considerably so he wrote to a publisher concerning some money for his "Endymion," and was forwarded £100. A friend, James Rice, and Hilton, the painter, forwarded £10 each, and Lord Fitzwilliam sent £50. The day before sailing, Haydon went to visit him, and he said that Keats seemed to be going out of life with a contempt for this world and no hopes for the other. Keats stated to Haydon that, if he did not get better soon, he would destroy himself. Haydon tried to reason with him but it was of no use, so he left deeply affected. At this time Keats wrote to his sister as follows:—

"Now you are better, keep so. Do not suffer your mind to dwell on unpleasant reflections. That sort of thing has been the destruction of my health. Nothing is so bad as want of health. It makes one envy scavengers and cinder sifters. There are enough real distresses and evils in wait for everyone to try the most vigorous health. Not that I would say yours are not real, but they are such as to tempt you to employ your imagination on them, rather than to dismiss them entirely. Do not diet your mind with grief, it destroys the constitution; but let your chief care be your health, and with that you will meet your share of pleasure in the world; do not doubt it. If I return well from Italy I will turn over a new leaf for you. I have been improving lately, and have very good hopes of 'turning a Neuk' and cheating the consumption."

Keats was anxious that Brown should accompany him to Rome, but the letter to him went astray and did not reach him. Severn was chosen and agreed to go. They left the London docks and the ship cast anchor at Gravesend for the night. At anchor nearby was a small vessel from Dundee, on board which was Charles Brown. Keats and Brown passed that night within a few yards of each other without knowing of it. Thirty-four days from London, the ship reached Naples and went into quarantine for ten days. They left Naples for Rome and occupied the rather uncomfortable quarters which had been pre-arranged for them there. For the next few weeks Keats apparently improved and he wrote home in a cheerful mood. A Dr. Clark was in attendance and he also

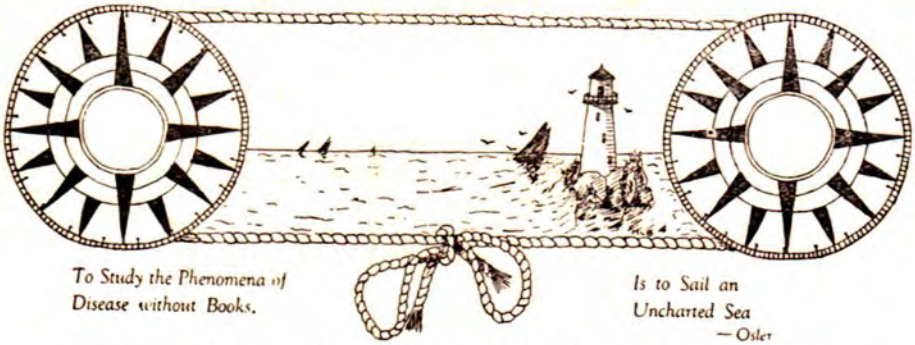
was quite optimistic at this time. Shortly afterwards, Keats had a severe haemorrhage followed by a period of violent fever. He pleaded for Severn to give him a dose of laudanum from the bottle which he had brought with him. He seemed to have given up all hope and even wish for recovery. He was resigned to his fate and requested Severn to choose a place for burial, which was a spot in the locality of the Pyramid of Caius Cestius, a hillock of green grass dotted with violets and a nearby flock of sheep tended by a young shepherd. Keats chose his own epitaph which read "Here lies one whose name was writ in water." Severn handed Keats a letter which he presumed was from Mrs. Brawne, but which was really from Fanny. Keats looked at the envelope and handed it back to Severn, requesting that it be placed in his coffin along with a purse and a letter from his sister, unopened.

Death came peacefully on February 23rd, 1821. He asked to be lifted up, saying that he was dying and asked Severn to thank God that the end had come. He was buried by his English friends in the appointed spot.

One year from the following summer Shelley died under tragic circumstances. A boat on which he was sailing disappeared in a storm and Shelley's body was recovered with a volume of Keats poems in his pocket. It is claimed that Tennyson owed considerable refinement to Keats' work. Tennyson wrote: "Keats, with his high spiritual vision would have been, if he lived, the greatest of us."

(To be continued)

Special reference should be made to the urogenital work of Jacob Henle (1809-1885). He discovered cylindric casts in the urine; pointed out that varicocele is almost invariably left-sided; described the expanded outer half of the Fallopian tube, known as Henle's ampulla; the portion of the uriniferous tubule, known as the canal of Henle; the granular mononuclear cells in the seminiferous tubules, known as Henle's cells; the fibrin formed by precipitating semen with water, known as Henle's fibrin; the remains of the gubernaculum surrounding the vas deferens and vessels of the spermatic cord, known as Henle's internal cremaster; and the striated muscular fibres encircling the prostatic and membranous urethra, known as Henle's sphincter. But his most interesting find in this field was the U-shaped turn of the uriniferous tubule which is formed by a descending and an ascending loop-tube, known everywhere as Henle's loop. Concerning this discovery, the fortunate Henle wrote one of his characteristic note to Pfeufer.



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Abstracts

PSYCHOGENIC ORIGIN OF ORGANIC DISEASE

MOSCHCOWITZ, E.

Arch. Neurol. and Psychiat., 32: 903, 1934

At a joint meeting of the sections of Medicine and Neurology and Psychiatry of the New York Academy of Medicine on February 13th, 1934, Dr. Moschcowitz outlined various diseases of organic nature which were thought to be psychic in origin, e.g. (1) many cases of essential hypertension, (2) exophthalmic goiter, (3) gastric and duodenal ulcer, (4) cardiospasm, (5) irritable spastic colon and mucous colitis.

In evaluating psychogenic factors, the speaker pointed out that the underlying personality or constitution of the patient must be considered, and it is usually of the phenotypic class. One must determine also the exciting factor which may be in the form of an emotional upset or conflict.

He points out that in the evolution of organic disease there are three stages, viz: (1) the constitution, (2) the fixation of an exaggerated function of the organs affected, (3) the development of the lesion. In observing the above stages one sees a marked difference in the reaction of different patients to strain and conflict and no explanation can as yet be offered to explain why one organ should be affected more than another.

The various diseases of psychogenic origin usually present five characteristics: (1) psychologically, they represent exaggerations of normal functions, (2) they are essentially human diseases and cannot be produced in animals, (3) they rarely occur before puberty, i.e. before the emotive and affective powers are fully developed, (4) they show a marked tendency to recurrence and (5) their incidence shows a strong relation to world crises and great emotional waves.

Following Dr. Moschcowitz's paper there were several presentations by various members of the Academy and some discussions with case reports which all bring out clearly the relationship of psychic trauma and maladjustment of exophthalmic goiter, peptic ulcer and idiopathic colitis. Although many of the cases are quite convincing, the general mood is that one should not accept anything that cannot be proved experimentally.

In closing the discussion, Dr. Moschcowitz points out that one should not be led to overemphasize the psychogenic aspect of disease, but rather that it should be turned to only after painstaking exclusion of all possible organic causes of the disorder.

—C. P. MCCORMICK, B.A., '35.

RADIAL PARALYSIS COMPLICATING FRACTURE AND DISLOCATION IN THE UPPER LIMB

GURDGIAN, E. S., AND GOETZ, A. G.

Ann. of Surg., 99: 487, 1934

Two types of radial paralysis are seen in association with fractures of the humerus and fracture and dislocation about the elbow joint. The primary type includes cases with paralysis caused by impact against the nerve at the time of the injury. The secondary type is manifested several days or weeks after the accident and is brought about by callus inclusion and scar tissue contraction about the nerve in the process of healing.

The radial is the nerve most commonly injured in fractures and dislocations. Various series give 4 to 7 per cent of radial paralysis in cases of fracture of the humerus. The nerve is in apposition to bone through at least a third of its course down the arm. Besides injury by stretching, bruising, or being caught between bony fragments, it may be injured by unnecessary manipulations.

The consensus of opinion is that radial palsy complicating fracture should be conservatively treated for about 3 months. If there are no evidences of returning function at this time, the nerve should be explored at the site of the fracture and treated according to the

pathology. Cases should be studied individually and treated earlier in the presence of certain findings such as radial palsy with: (a) increasing severity of paralysis, (b) no evidence of returning functions after 11 weeks, (c) non-union of bone, (d) evidence of associated dysfunction of the median, musculocutaneous or medial antibrachial cutaneous nerves, (e) excessive callus formation, (f) appearance of palsy following manipulation, (g) the presence of overriding and comminution of fragments, (h) other indications for open operation, (i) old anterior dislocation of head of the radius.

In a series of cases it is noted that the period of disability in the group where operation was performed before the 3 months period is definitely shorter.

In summary, the authors state that: (a) radial palsy complicating fracture of the humerus above the level of the radial groove may be conservatively treated for 3 or 4 months, (b) radial palsy complicating fractures of the middle third of the humerus should be explored within 4 to 6 weeks, particularly if comminution and overriding of fragments is present, (c) radial palsy complicating fractures of the humerus near the elbow joint can advantageously be treated early in selected cases, (d) radial palsy complicating old anterior dislocation of the head of the radius may be effectively treated by removal of the head of the radius through an anterior approach.

In fractures of the humerus (particularly the middle third) there should be as little manipulation of the fragments as possible. The use of traction for functional alignment is preferable.

—W. SMITHER, B.A., '35.

CLINICAL IMPORTANCE OF ACHLORHYDRIA

HURST, A. F.

Brit. Med. J., 1934 (ii), 665, (Oct. 13th)

Too frequently achlorhydria has been considered a syndrome, rather than a symptom in a stomach whose mucosa is progressively undergoing a disturbed physiology.

The functions of gastric juice are fourfold:

(1) Peptic digestion is carried out by the combined secretions of the oxyntic (HCL secreting) and the chief (pepsinogen secreting) cells. This is not necessary for complete or perfect protein digestion as tryptic digestion in the small intestine can digest proteins completely.

(2) Antiseptic action depends upon the hydrochloric acid.

(3) Haemopoiesis depends upon two factors, (1) Absorption of iron—the absence of hydrochloric acid does not allow organic iron to be changed into an absorbable form, (2) Production of haemopoietin, the absence of which results in Addison's anaemia.

(4) Neuropoietin is necessary for normal nutrition of the nervous system. Its absence leads to degeneration of the posterior and lateral columns of the spinal chord.

Ten per cent of people have hypochlorhydria which will become achlorhydria if subjected to irritation of the mucous membrane, which results in a chronic gastritis. Achlorhydria of congenital origin is very rare.

The gastric mucous membrane normally protects itself against self-digestion by a covering of mucus. In inflammatory conditions, an excess of mucus is secreted which plugs the orifices of the glands. This decreases the amount of gastric juice and as a result the secreting cells degenerate. In the hypochlorhydric stomach, the end result is achlorhydria. This may be remedied by treating the gastritis but commonly bacterial invasion has occurred in the absence of efficient antiseptic action and repair is imposisble. It may eventually interfere with the elaboration of haemopoietin and neuropoietin.

Post - operatively, gastrojejunostomy seldom produces achlorhydria, because hyperchlorhydria is usually present before the operation. Complete gastrectomy sometimes precedes pernicious anaemia and sub-acute combined degeneration of the cord. Partial gastrectomy is frequently followed by simple achlorhydric anaemia.

The author believes that chronic gastritis causes achlorhydria and that carcinoma follows as a result of malignant degeneration of the chronically inflamed mucous membrane. Therefore, achlorhydria in carcinomatous stomachs is not a result of carcinoma.

He suggests the necessity for the treatment of gastritis, both acute and chronic, as a prophylactic for achlorhydria and for carcinoma. Also, he maintains that treating achlorhydria with dilute hydrochloric acid is treating the symptom not the cause.

—H. H. WASHBURN, '36.

CONGENITAL CLUB-FOOT: AN ANAYSLIS OF DEFORMITY AND PRINCIPLES OF ITS TREATMENT

McGREGOR, A. L.

Lancet, 1933 (ii), 20, (July 1st)

Congenital club-foot occurs once in 1,000 births and of these the great majority are talipes equino-varus. It is necessary to analyze the deformity in order to separately and adequately deal with each element.

ANALYSIS: (1) The talus is plantar flexed and is too wide for the mortice formed by the internal and external maleolus. (2) The calcaneus is plantar flexed and inverted at the sub-taloid joint. (3) The fore-foot is adducted, inverted and plantar flexed at the talocalcaneonavicular joint, i.e. there is plantar flexion of the talus, calcaneus and fore-foot and inversion and adduction of the calcaneus and fore-foot.

TREATMENT: Cases with maldeveloped upper and lower limbs with severe fixed club-foot or with club-foot dependent upon defective leg and foot bones, or with club-foot dependent upon spina bifida and neurological defects, cannot be cured. Treatment is begun in the first week of life after ruling out the above conditions. The aims of treatment are: (1) to overcorrect the deformity, (2) to maintain the correction, (3) to insure that the child can maintain the correction.

The first step is splintage for correction of the adduction at the mid-tarsal joint. This is achieved over a period of about three months by progressive adduction by means of adhesive strapping to a lateral metal splint, from the head of the fibula to ½ inch beyond the tip of the fifth toe. The next step is manipulation under anaesthesia to correct the adduction of the fore-foot at the mid-tarsal joint. This is done by placing the outer border of the foot on a padded wedge-shaped block with the wedge just behind the base of the fifth meta-tarsal bone. The foot is straightened by bending it over the wedge to over-correction. To correct the inversion of the calcaneus and of the fore-foot, the heel and ankle are grasped firmly with one hand while the fore-foot is rotated out on its long axis so that the sole looks outward. To correct the equinus, the whole foot rather than only the fore-foot is forced up with one hand while the ankle is supported with the other hand. In this way the plantar flexion of the calcaneus as well as of the fore-foot is corrected and a severe type of flat-foot is prevented.

With the knee in a position of 60° flexion, the limb is encased in plaster from mid-thigh to toes, with the foot in a position to over-correct the deformity. Tenotomy, except of the tendo-achilles, is obsolete and is rarely indicated. Dorsiflexion of the talus by forceful manipulation into the ankle mortice can usually replace tenotomy.

Plaster is reapplied at intervals of four weeks with manipulation on each occasion until the child learns to walk. Once the child begins to walk, all that is required is raising the outer border of the heel ¼ inch.

The most efficient massage is the active movement of a healthy child. Exercises to strengthen the muscles which maintain dorsiflexion in eversion can be carried out only after two or three years of age.

The only serious complications are failure of over-correction, injury to the lower end of the tibia and a bowing of the tibia. In conclusion, simple talipes equino-varus admits of 100 per cent cure by the family doctor. Treatment should begin at birth and last until the age of three with care to prevent relapse. Tenotomy, except of the tendo-achilles and leg irons have no place in the modern treatment of club-foot in infancy.

—M. D. WILLIAMS, '35.

CEREBRAL SPASTIC PARALYSIS

RYERSON, E. W.

Surg. Clin. of North Amer., 12; 29, 1933

A female, aged 7½ years, presented at the author's clinic, was a premature baby being born at 6½ months. Nothing abnormal was noticed until the age of 5 months when some of her muscles were noticed to be spastic and could not be controlled in the normal way. The arms and legs exhibited jerking movements. Both of the legs were crossed like a pair of scissors and the hands, legs and arms were spastic. The feet were in an equinus position. The knees were flexed, the toes abducted and she could not walk. Her mentality was not normal and there was retardation of the growth of the brain.

Two causes of cerebral spastic paralysis are:

(1) Lack of development of the brain.

(2) Haemorrhage, which is the more common cause, usually due to a tearing of the longitudinal sinus at birth.

TREATMENT for the contracture of the adductors:

(1) Division of the obturator nerve is the operation of choice. In milder cases, portions of the anterior and posterior branches of the obturator nerve can be resected which allows enough relaxation to give satisfactory results.

(2) Cutting the adductor muscles in the upper part of the thigh and the application of a plaster cast with the legs in abduction, until there is no more tendency to adduction.

TREATMENT for contraction of the knees due to the spastic contracture of the biceps, semitendinosus and semimembranosus:

(1) Lengthening of the tendons of these three muscles. If flexion recurs, the operation can be repeated. This is preferable because the operation can be controlled.

(2) Division of the fibres of the sciatic nerve to these muscles often results in paralysis due to non-regeneration of the nerves.

TREATMENT of the equinus deformity of the foot due to contracture of the gastrocnemius and soleus:

Lengthening of the tendo-achilles is better than division of the nerve.

OTHER OPERATIONS:

(1) Division of the sympathetic rami that connect the sympathetic nervous system with the motor nerves.

(2) Division of the posterior roots of the spinal nerves in the lower dorsal and lumbar regions.

If the brain is damaged due to a haemorrhage and a spinal puncture reveals blood, a craniotomy is performed and the clot removed.

If there is lack of development of the brain as was evident in the case cited, treatment is limited to the lengthening of the muscles and tendons and in some cases by division of the nerves which supply the muscles and by re-education so that the children will learn to use their muscles. There is always some spasticity remaining in the muscles, especially those of the legs.

As co-operation of the patient is necessary, the treatment in mental defectives is not very satisfactory.

—R. RIDER, '35.

PRE-OPERATIVE PREPARATION OF PERITONEUM IN SURGERY OF THE LARGE INTESTINE

YOUNG, E. L., AND MARKS, G. A.

Surg. Gyn. and Obstet., 59: 610, 1934

The chief cause of mortality following operations on the large intestine has been post-operative peritonitis. This is due to one of three causes: (1) Poor surgical technique, (2) A leak in the suture closure, (3) Low tissue immunity. The first factor has been lessened by the use of improved intestinal clamps. The second danger has been lessened by all those measures which tend to improve the condition of the bowel. It is the third factor that the authors have made their basis of study.

A series of 49 cases of resection of the large bowel was treated with amniotic fluid, in an attempt to raise the tissue immunity of the peritoneum. An intraperitoneal injection of about 75 cc. of amniotic concentrate, given 5 to 8 days pre-operatively was employed. At the height of the reaction the leucocytic count ranged from 25,000 to 30,000 per cu. mm. The peritoneal fluid showed a response of from 50,000 - 100,000 leucocytes per cu. mm., indicating that an aseptic peritonitis had been produced.

In the 49 cases there were 3 deaths of which only one was found to be due to post-operative peritonitis. There was a mortality of only 2 per cent. In a control series of 46 cases of operations on the large intestine in whom no intraperitoneal injections were used, there were 8 deaths, i.e. a mortality of 17.3 per cent. If we consider only those cases in which resection was done, the mortality was 38 per cent.

From these observations the authors believe that the use of this non-specific peritoneal stimulant contributes materially to the safety of operations in the peritoneal cavity involving resections of the large bowel.

—H. O. SMITH, '36.

ORTHOPEDIC CARE IN ANTERIOR POLIOMYELITIS

MCCAMMON, J. W.

J. of Med., 25: 130, 1934

Poliomyelitis is divided into three stages: (1) Acute, (2) Convalescent, (3) Chronic.

The acute stage extends from the onset of the disease to the disappearance of muscle tenderness, an interval of 8 to 12 weeks. In this phase we have acute inflammation and congestion of the cord with paralysis, muscle tenderness and circulatory disturbances in the extremities.

Treatment is directed toward the relief of pain, the maintenance of the temperature of affected parts and the prevention of deformities. No massage or

manipulation is given. Heat should not be intense and should be by bulbs. There should be adequate splintage for two purposes: (1) To protect sensitive muscles from sending impulses to the inflamed cord, (2) to prevent deformity. The position of fixation should be determined by the function of the part involved, i.e. legs in position for weight bearing and arms mid-way between full flexion and full extension. Optimum functional position should be strived for. Plaster splints are more desirable than wire or aluminum as they can be molded accurately.

The convalescent stage begins when muscle tenderness subsides and lasts 18 to 24 months. Muscle function returns and active treatment is indicated. It is important to examine every muscle carefully for paralysis. Paralysis is graded in 6 groups such as complete, trace of movement, movement unhindered, resistance against gravity, useful movement and normal.

Treatment consists of massage, manipulation and exercise. Massage lightly and precede by a period of warmth. Manipulate to stretch some overacting muscle or to correct some deformity. Exercise may be given with a Bristow coil, on one muscle at a time. The current produces contraction by active stimulation. Exercises in warm salt bath eliminate gravity and friction. Avoid over-fatigue. When exercises can be done without great fatigue, the patient may be allowed up with the support of braces. Re-examine the muscle every 4 to 6 months for two years. In this stage no surgery except tenotomies is done.

In the chronic stage impaired body mechanics must be adjusted by a brace, an operation or a series of operations. Unstable joints are stabilized by fusion or bone blocks. Tendons may be transplanted. Judgment must be used to decide operation. Remember that lower extremities are used for weight bearing and upper extremities for self-assistance. Brace fitting is important and should be closely supervised by the physician. Continue physical therapy as long as improvement is obtained.

—MAX RYCHMAN, '35.

IMPERFORATE ANUS

RHODES, R. L.

Amer. J. Surg., 24: 828, 1934

The author reports the case of a newly born infant without the slightest suggestion of an anus, not even a dimple in the region. With a view to obviating the trials of blindly searching for a rectum, the author stresses the advantage of inflation of the gastro-intestinal tract with air as a means of ascertaining the extent of the deficiency.

The infant is encouraged to swallow large volumes of air. This is brought about by causing the child to cry because of spankings at half-hour intervals, also by giving it water regularly. Should this fail to inflate the bowel, buttermilk is administered in order to produce fermentation. That the tract is subsequently inflated is revealed by a tympanitic percussion note, although bulging or tugging be imperceptible at the anal region. This is further borne out by the fluorescope which shows a rectum ending blindly but which nevertheless can be reached by the tip of the finger through firm pressure upon the perineum, even though the anal canal is entirely absent.

An incision of about 2 cms. is made in the midline of the perineum at the approximate site of the anus. The finger is introduced and is slowly bored upwards until it is felt to contact the rectum, a distance of about 5 cms. The end of the rectum is freed from the adherent peritoneum. With the finger serving as a guide, the tip of the rectum is grasped with an Allis clamp and it is drawn down through the skin incision. After its walls have been sutured with chromic catgut to the surrounding muscles the tip of the rectum is opened and all of its layers are sutured to the skin edges with fine black silk.

At weekly intervals at first, and at semi-weekly intervals later, the anal canal is carefully dilated up to 1 cm. to overcome constriction. For an infant, the bowel functions normally, without the least evidence of the constant leakage usually associated with incompetent sphincters. At 13 months the child has perfect control over its bowel movements and gives not even the slightest suggestion of incontinence.

—HENRI J. BREAULT, B.A., '36.

A NOTE ON THE ANAEMIAS OF PREGNANCY

KERSLEY, G. D., AND MITCHELL, D. A.

Brit. Med. J., 1934 (ii), 720 (Oct. 13)

The anaemias of pregnancy are difficult to recognize because their onset is insidious and the symptoms are frequently ascribed to the pregnancy. They are the common types of anaemia and if allowed to go untreated may cause dangerous obstetrical shock in labour.

The microcytic type of anaemia is the most common. It is caused by deficient iron in the diet, deficient absorption of iron, or excessive utilization of iron by the foetus. Dyspepsia, dysphagia, soreness of the tongue and enlargement of the spleen are frequently present in anaemia of pregnancy.

Pernicious anaemia, anaemia due to haemolysis, anaemia due to haemorrhage and acute iodopathic haemolytic anaemia are rare. The latter condition differs from the others in that the symptoms of dyspnoea, oedema, syncope, fever, and haemorrhage onset suddenly with no signs of infection or toxaemia. The blood shows leucocytosis and nucleated reds, polychromasia and a positive Van den Bergh reaction. The cause is not known and the treatment is transfusion or liver therapy in some cases.

The frequency of occurrence and the insidiousness of the anaemias of pregnancy indicate that routine haemoglobin estimations should be performed throughout pregnancy. Treatment consists of large doses of iron and liver in cases diagnosed before term. In cases diagnosed at or near term, labour is delayed as long as possible and the case treated as above, then when labour begins Caesarean section with simultaneous transfusion usually gives the least obstetrical **shock.**

The authors illustrate by case reports the three important points regarding the anaemias of pregnancy, namely (1) The frequency of moderate microcytic anaemia, (2) The risk of obstetrical shock if the anaemia is not treated and (3) The insidious nature of the disease.

—D. RALPH WEYLIE, '36.

DIABETES MELLITUS IN TWINS

WATSON, E. M.

Can. Med. Assoc. J., 31: 61, 1934

A case report of monozygotic twins who developed diabetes mellitus at the same age and to the same degree is given. This is the twenty-first recorded instance of diabetes in twins. There seems to be an hereditary factor concerned in diabetes as is indicated by the fact that, although dizygotic twins are three times as numerous as the monozygotic variety, the vast majority of the reported cases of twin diabetics are of the monozygotic type. The hereditary element may be only a predisposition to the disease, the actual development of it depending upon other activating causes.

—G. I. SAWYER, '36.

PROGRESSIVE (CENTRAL) MUSCULAR ATROPHY

MORGAN, H. J.

Internat. Clinics, 1: 190, 1933

The author classifies the entire group of conditions leading to localized atrophy of muscles as follows:

PRIMARY MUSCULAR ATROPHY:

1. Progressive Muscular Dystrophy (Erb).
2. Myotonio congenita (Thomsen).
3. Myotonia atrophica.

SECONDARY MUSCULAR ATROPHY:

1. Infections (poliomyelitis, neuritis).
2. Compression (caries of spine, cervical rib, plaster casts).
3. Toxic (lead, arsenicals, alcohol, tricresol, phosphate).
4. Traumatic (fractures with nerve trauma, wounds).
5. Neoplastic and degenerative (syringomyelia, multiple sclerosis).
6. Progressive muscular atrophy—Aran-Duchenne type (chronic anterior opliomyelitis).
7. Progressive muscular atrophy—Charcot type (amyotrophic lateral sclerosis).
8. Progressive muscular atrophy—Bulbar type (glosso-labio-laryngeal paralysis).
9. Progressive muscular atrophy—Charcot-Marie-Tooth type (progressive neural muscular atrophy).

In the primary atrophies there are no signs of involvement of nerves; sensory changes are absent; frank reaction of degeneration is absent and changes in reflexes are due to the state of the muscles and not to pathology of motor neurons. Secondary atrophies may be caused by involvement of the lower motor neuron or by changes in the central nervous system. The group with changes in the motor division of the central nervous system is divided into separate disease designated progressive muscular, amyotrophic lateral sclerosis and progressive bulbar paralysis. A case report is presented to illustrate the fallacy of considering the three as separate clinical conditions.

A white female, aged 39, complained of inability to use her hands. Weakness and coldness started in the right hand following an attack of measles. Later the left hand became involved. Wasting of muscles extended to the elbows. The muscles involved were the interossei, lumbricales, extensors and flexors of forearm and the muscles of the thenar and hypothenar eminences. Treatment with strychnine and physiotherapy had

no effect. She returned in three months with slight weakness of the muscles of the shoulder girdle. She had difficulty in swallowing. The tongue was tremulous. There are fibrillary twitchings of the involved muscles. Atrophied muscles showed reaction and degeneration. The diagnosis was: Muscular atrophy secondary to disturbance of the motor innervation. The cause was unknown. Measles may have initiated the condition. No treatment was of any avail in this case.

—OLIVE STEWART, B.A., '35.

CORRECTION

Vol. V, No. 1, Page 37

Blood Pressure in Tuberculosis

abstracted by P. M. Young

Should read:

3. The normal systolic blood pressure was considered to be 100 mm. of mercury plus the age.

"CLOVER LEAF" SLING IS PARALYSIS OF THE SERRATUS MAGNUS

FOUCAR, H. O.

Brit. Med. J., 1933 (ii), 865, (Nov. 11th)

The aetiology of isolated paralysis of the serratus magnus is infection or trauma and the prognosis is not necessarily unfavourable. The treatment according to Mackenzie's principles is rest, followed by graduated exercise. Physiological rest is obtained by placing the hand of the affected side on the opposite shoulder. Ordinarily, to maintain this position a collar and cuff sling is used but this allows the shoulder to swing backwards. The author devised a "clover leaf" sling which maintains the serratus magnus in a position of physiological rest and prevents movements of the shoulder. A report is given of a case with isolated paralysis of the serratus magnus which recovered completely following this method of treatment.

—R. LAWSON, '37.

MADAME MARIE CURIE

Madame Marie Curie, one of the world's most renowned scientists, died on July 4, 1934, at Sallanches, France, at the age of sixty-six years. Her death was due to pernicious anaemia, in all probability resulting from long exposure to radium. By her discovery of the elements of radium and polonium in 1898 she undoubtedly made the greatest contribution to medicine since the time of Louis Pasteur. It is doubtful if any scientific achievement has ever attracted so much popular attention or has been of such world-wide benefit to mankind as her discovery of radium and its subsequent application to medicine.

In 1903, Madame Curie and her husband, Pierre Curie, received the Nobel Prize for physics, and in 1911, Madame Curie received it for chemistry—the first person ever to receive it twice. In 1903, the Curies together received the Davy Medal of the Royal Society. Innumerable honours have been conferred upon the distinguished scientist, whose entire life was characterized by a quiet and intense devotion to her laboratory work. In 1919 a gram of radium was presented to Madame Curie by the grateful people of the United States and in 1929 she received from them the money with which to purchase an additional gram.

At the time of her death she was head of the research department of the Radium Institute established by the University of Paris. Madame Curie's name will live as one who enriched the field of science and who added a weapon of immense effectiveness and value to the field of cancer therapy. To the thousands of cancer patients who have been benefited by radium, she will be immortalized as a true benefactor of mankind.

—*Nova Scotia Medical Bulletin.*

Editorial

THE average student graduating in medicine goes out with the idea foremost in his mind that his medical training has been a preparation for the care of the sick. The courses he has taken and the subjects he has been taught are regarded as a means of providing him with a certain knowledge which is required to enable him to diagnose and treat disease.

Medical schools do not attempt to graduate men qualified in the special fields of medicine. They have the point of view that undergraduate study is planned to develop general practitioners so that the young graduate is not fitted to enter any special field without post-graduate study at a recognized hospital or teaching institution.

Medicine has been described as a science and an art, but it is basically still a service to mankind. The present day graduate realizes that many changes are going on around him and if he has a social outlook on life public health work, as a future career, appears very bright.

Public health presents, probably, one of the most fertile fields of specialization to-day. With the great advances made in modern medicine public health has naturally kept apace of or has possibly surpassed some of the branches in research and progress, so that there is at the present time increased interest and work in public health for the young ambitious graduate.

Public health as a career with large financial return is a mistaken idea. There are, however, certain advantages, such as responsibility of position, security of salary and regular hours, which must be considered. Then again those who dislike private practice should be attracted to a work such as public health.

There are open to-day positions, administrative and laboratory, to those persons who are suitably qualified. Laboratory work in public health now entails such branches as serology, preparation of vaccines, tissue diagnosis and blood chemistry.

To be successful the public health physician requires certain qualifications such as tact, so that he may deal with a varying type or group of individuals. Personality is essential which along with special training in this field assures a young graduate a reasonable amount of success in this branch of our present day medicine.